FULLY INTEGRATED LIFECYCLE MISSION SUPPORT SERVICES (FILMSS)

FOR
AMES RESEARCH CENTER (ARC)

Statement of Work

8/12/2011

National Aeronautics and Space Administration
Ames Research Center
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1.0 BACKGROUND

The NASA Ames Research Center (ARC) develops and manages programs, projects, and technologies that support NASA's science, exploration, and aeronautics goals, with a focus on innovation. Currently Ames supports a variety of mission types and programs, including planetary science, astrophysics, space biology, heliophysics, and earth science missions; small satellite (small sat) missions; technology development; aeronautics research; and collaborative science programs.

This Statement of Work (SOW) describes the requirements for supporting a sustained project management capability for Ames Research Center that encompasses all phases of mission and project lifecycles for flight programs and projects, as well as support for various other programs and functional offices at ARC.

2.0 SCOPE

This contract will provide program and project management support for flight development projects (such as mission, instrument, and technology development efforts), aeronautics research projects, collaborative science programs (such as ISS, virtual institutes), various Ames internal and NASA-wide project offices and Education and Public Outreach, from Phase A through Phases E/F.

In addition, this contract will support ARC project management capabilities for flight missions by providing project and science management support to Ames efforts to win competitions for flight project solicitations and carry them through to successful completion. The work will include strengthening Ames' approach in developing proposals, and for collaborating with external technology and science partners.

The tasks issued under this contract will require support for multiple programs and projects concurrently. This includes support for programs currently underway at Ames and for those yet-to-be-determined projects and programs for which Ames will be responsible in the future. Examples of current programs, organizations, projects and project offices are the SOFIA project office, Kepler operations, ISS Utilization office, the NASA Astrobiology Institute, the NASA Lunar Science Institute, space biosciences, the Aeronautics Projects Office, Ames' proposal development services, the Ames History Office, the Ames Chief Scientist's office, the Ames Center Chief Technologist’s office, and other functional offices around the Center. Tasks under the contract are expected to change over its lifetime, to flex with Ames' program, project, and budget needs. Contract tasks may be added, deleted, or modified as agency and Center goals change.

This contract requires the Contractor to provide management, personnel, equipment, materials, and facilities (not otherwise provided by the Government) to meet the requirements described in this SOW. This contract requires the Contractor to provide management for the work to be performed, to assure the availability of qualified personnel for timely response to requirements, and to manage all requirements according to the Contractor-provided and Government-approved management plan.

The majority of the work will be performed on-site at NASA ARC with occasional support to be provided at other NASA Centers, Principal Investigator Laboratories, other countries, and at such other locations as directed by the Contracting Officer.

3.0 REQUIREMENTS

3.1 GENERAL REQUIREMENTS

NASA ARC will issue Contract Task Orders (CTOs) for the purpose of defining the services and deliverables to be provided by the Contractor. Task orders will contain defined requirements (such as deliverables, significant milestone dates), cost/price, and established performance measurement criteria. Contract tasks may be added, deleted, or modified as agency, directorate, and/or division goals change.

The Contractor shall:

a) Provide overall management and oversight of all resources and tasks on the contract, facilitating the sharing of expertise across Ames' projects and programs in a matrixed fashion and ensuring that the proper resources are available and correctly allocated within and across tasks. The contractor shall identify conflicting and/or complementary needs among contract tasks, and propose innovative ways of leveraging resources to ensure that conflicts are resolved and needs met.

b) Plan, manage, control, and coordinate all work under this contract in accordance with the Contract Task Orders (CTOs) issued by the Contracting Officer; manage the resources allocated by NASA for specific tasks in a manner to ensure project and management goals are reached in accordance with agreed upon milestones; and ensure that personnel assigned to tasks have training and expertise required for that task.

c) Identify common requirements across missions, payloads, experiments, and programs and projects; ensuring continuity and coordination for various flight and airborne mission tasks. The Contractor shall develop, for ARC approval, standardized procedures to be used by multiple projects across the Center. The Contractor shall maintain an integrated

schedule for each mission, payload, and project that is consistent with the Programs' and Projects' scheduling activity and reporting requirements. The Contractor shall use scheduling software that is compatible with the software used by the specific Program or Project; and support ARC in maintaining a master integrated schedule which tracks multiple ARC space flight and airborne development and operations.

d) Interface with other organizations and contractors across the Center to obtain specialized services for the production of various multi-media end products.

e) Provide support for Ames' projects, programs, science and technical teams in their use of collaborative tools for communication and collaboration over distance, such as online meeting software support, videoconferencing support, virtual world project support, and data visualization and analysis support.

f) Provide IT support including development and deployment of websites and development and management of databases.

g) Follow all relevant Federal, State, Local, Agency, and Center rules and regulations, including Ames Management System (AMS) and relevant AMS policies. This includes following applicable Ames' procedures that are subject to audit.

h) Attend relevant training, provided by the Government, as required for all on-site employees. Specific procedures will be indicated on each task order response.

i) Ensure that the Government has adequate insight into the risks associated with the Contractor's ability to accomplish tasks outlined in any CTO.

j) Provide property management to ensure accountability for installation-provided equipment and facilities and shall be responsible for annual inventory surveys and accountability verification forms.

k) The Contractor shall coordinate travel within specific task orders as required.

l) For each CTO, the Contractor shall:

- Collaborate and exchange technical information with the Government staff in order to meet the requirements of each CTO.
- Provide research support on a task-by-task basis, including direct research functions and indirect support such as technical and

programmatic reviews.

- Provide short turn-around deliverables for specific project milestones as needed and within the time frame outlined in the approved CTO.
- Support the development, infusion, deployment and transfer of technology efforts with NASA customers.
- Attend and participate in group and project meetings.
- Present research, work in progress, and results to civil service management and at local and international conferences.
- Support (occasionally short-notice) preparations for demonstrations and presentations of research, work in progress, and results to visitors and technical delegates, including supporting and/or hosting of technical workshops as needed
- Travel as needed to conferences, field sites, universities, and other agencies in the performance of research, integration of products, technology development and infusion, and other important demonstration of results. All foreign travel by Contractors supporting NASA requirements must be documented in country clearance cables to the U.S. State Department. The ARC International Services Office (also known as the International Travel Office, under the auspices of Code JP, *Protective Services*) will draft and submit the cables to the State Department. Contractors will be required to complete an Advance Notice Form (ANF) at least three weeks prior to start of foreign travel.
- Acquire resources (equipment, supplies) as needed to support the successful completion of all CTO and related work
- Provide technical writing and editing for the preparation of technical papers, reports, proposals, and newsletters. The technical expertise shall include word processing, illustrating, and preparation of new text and graphics; editing function for revising and updating documents and coordinating the physical production and distribution of documents.
- Establish and maintain project operational and documentation databases, including requirement traceability.
- Provide Education and Public Outreach web site development and maintenance, including approved content, and provide Education and Public Outreach materials as needed and that has been coordinated with the Strategic Communications and Education/Public Outreach Divisions and other E/PO leads as required.
- Provide logistical and administrative support for organizing and coordinating project meetings, activities, conferences, workshops, symposia, science working group meetings, and review committee meetings.

3.2 PROJECT MANAGEMENT

This section describes the project and science management requirements to sustain and enhance Ames' ability to carry projects through successful completion, thereby strengthening Ames' efforts to win flight project competitions. The work includes strengthening Ames' approach in developing proposals, and for collaborating with external technology and science partners.

3.2.1 In accordance with the CTO, the Contractor shall:

a) Provide versatile and adaptable multi-functional project teams for various ARC projects including end-to-end project management support for ARC, from concept development and Phases A through Phases E/F for a range of airborne, space flight and engineering projects. This will include a spectrum of projects of various magnitudes, from entire flight projects for which ARC is managing the mission (large scale to small sat), to instrument development, and technology development projects.

b) Conduct regular monthly project status reviews, and, as a minimum, technical reviews at the major project or end-item development milestones (Requirements reviews, Preliminary Design Reviews, Critical Design Reviews, Test Readiness Reviews, etc). Review meetings will generally be conducted at ARC but may be conducted elsewhere if determined necessary by NASA and included in the CTO.

c) Support the development of ARC proposals for various opportunities including Announcements of Opportunities for NASA missions, DOD opportunities, partnering, and offerings from other funding agencies.

d) Provide project support including:

i) system architecture design
ii) expertise in team building
iii) assessment of project feasibility
iv) assessment of technology readiness
v) project implementation planning
vi) risk assessment, operations plans and concepts
vii) requirements analysis
viii) support for management of budgets and schedules
ix) refinement of project requirements and specifications
x) trade studies and analyses
xi) system design and development
xii) refining cost and schedule estimates and basis of estimates
xiii) refining implementation plans, schedule, and feasibility studies

xiv) refinement of designs and risk assessment
xv) support for project reviews
xvi) support for NASA's oversight of fabrication, assembly, integration and test per the project plan
xvii) tracking of schedule and budgets
xviii) support for launch and associated activities
xix) support for mission and systems operations and for mission closeout, analysis, documenting of lessons learned,and archiving.

e) Prepare documentation as needed, including project work plans, procedures, cost analysis, associated activity charts and schedules, reports, studies, and correspondence.

f) Support the development, implementation, and operations associated with space biology and the Human Research Program (HRP) missions and payloads, including science integration, experiment requirements definitions/development, payload instrumentation, hardware development, biocompatibility testing, mission operations, and post-flight processing.
g) Support ARC program and project integration with other organizations such as NASA Headquarters, other NASA field centers, foreign space agencies, commercial space companies, science working groups, aerospace companies, other government agencies, advisory groups, principle investigators, universities, and other entities.

h) Conduct and support advanced planning and strategic management and analysis activities, including the development of white papers and market surveys. Other activities would include monitoring, tracking and supporting databases for portfolio management and collaborative awareness processes through, for example, the New Pursuits Registry and the Pursuit Review and Evaluation meetings; and facilitating workforce alignment and connectivity through support for documents such as Center at a Glance and Ames Strategy@Work.

i) Coordinate workshops, technical interchange meetings, quarterly/annual reviews, planning meetings and events.

3.3 PROGRAM MANAGEMENT AND SCIENCE

This section describes the required support for Ames current and future technical and science programs, including space flight and airborne programs, technology programs, science programs, and the virtual institutes.

In accordance with the CTO, the Contractor shall:

a) Provide support for Ames-managed solicitations, including the following:

i) Prepare documentation in support of NASA ARC-managed solicitations for flight experiments, science programs, technology programs, and other ARC programs.

ii) Support the development and evaluation of proposals submitted to ARC-managed opportunities.

iii) Support the peer review process including, but not limited to: preparing science and technical summary packages that may include information on background, scientific rationale and relevance, proposer qualifications, flight/technical experience, results, and references.

b) Provide program support including technical analyses, administrative and operational support, documentation and archiving support, and database support.

c) Provide support for virtual institutes, including those that currently exist and any future virtual institutes that are established at ARC. The contractor shall

• Coordinate end-to-end processes for Institute-sponsored programs, which may include publicizing opportunities, coordinating the receipt and review of proposals/applications, processing awards, implementing approved requests through appropriate funding mechanisms, communicating with award recipients, and collecting data for annual reports.

• Support the development of the institutes' international partnerships.

• Periodically assess the state of the art in collaborative tools and advise NASA on new tools and technologies that may benefit the institutes.

• Provide technical support to the Institutes for current or future collaborative tools such as systems that may be used to conduct science over distance, virtual field trips, virtual world systems, online meeting software and videoconferencing systems.

• Provide expertise and knowledge of the state of the art in the technologies for collaboration and in the social and organizational aspects of collaboration for science.

• Support institute websites and web-based program management tools such as community directories, annual reports, and research archives.

• Support and lead the E/PO activities of the Institutes including communicating science discoveries, coordinating Institute’s research teams E/PO efforts, coordinating Institute’s respective E/PO Working Groups, track and report to NASA on expenditure of E/PO funds,

coordinate review of E/PO proposals from teams and facilitate funds transfer to teams.

• Provide virtual institute administrative and operations support

• Provide Institute-related program support for NASA Headquarters programs and divisions, such as website and Education and Public Outreach (E/PO) support .

d) Provide comprehensive support for meetings and conferences, including virtual meetings conducted using a suite of collaborative tools, such as online meeting software and dedicated videoconferencing systems.

e) Provide support for science teams [such as the Ames Research Center team of the NASA Astrobiology Institute (NAI)], including research and administrative support for various activities, field trips, laboratory investigations and databases; dissemination of research and education content on web sites, at science and education professional meetings, in educational products, and the public; and preparation of reports as required.

f) Provide research support on a task-by-task basis, including direct research functions and indirect support such as technical and programmatic reviews

g) Support the development, implementation, and operations associated with ISS utilization and functionality technology demonstrations, missions and payloads, including science integration, experiment requirements definitions/development, payload instrumentation, hardware development, biocompatibility testing, mission operations, and post-flight processing.

h) Support technology special studies leading to the creation of innovative approaches and new collaborations.

3.4 PARTNERSHIPS, PROPOSALS, and FUNCTIONAL OFFICES

This section describes the required support to Ames efforts in partnering more effectively and strategically with external technical and scientific entities in order to win competitions for flight projects and carry them through to successful completion [. It also describes required support of various functional offices at Ames.

In accordance with the CTO, the Contractor shall:

a) Support efforts to develop and improve ARC proposal processes and proposal submission outcomes. The contractor shall support all proposal teams. Proposal development support includes technical editing, graphics and administration of such tasks. Contractor shall support the development of a dashboard tool that provides a clear and informative

overview of all competitive proposals for which Ames can submit. The tool should include expected announcements of opportunity (A/Os), current and open A/Os with details of their status, organization leads, PIs, funding levels, etc., and closed A/Os with details of their status, expected award announcements, etc.

b) Provide database solutions and proposal development support that contains information on partnership development and technology transfer. Activities in this area include developing solutions to store and access data, and modification of existing databases, maintenance of databases and data analysis.

c) Identify, develop, and provide potential innovative collaborative technology opportunities between the various business partnership, institute consortiums, and industry

d) Support requirements identification and specification, statement of work development, benchmarking, and other activities associated with Government procurement (i.e., Request for Proposals, Cooperative Agreement Notices, NASA Research Announcements).

e) Provide support for conferences, workshops, and programs. This will include obtaining and distributing workshop materials, setting up and running meeting operations, taking minutes or notes, escorting or driving VIPs, and assembling meeting documents.

f) Provide support for exploring, elucidating and preserving the scientific and engineering experience of the Center. Technical expertise is required in history and archives. This history office will conduct research and writing projects as needed by Center leadership, and shall include collecting and archiving information on programs and capabilities, and constructing assets to aid researchers within NASA and at partner research institutions

g) Provide support for the Human Research program at ARC, and in particular the Office for the Protection of Human Research Participants (OPHRP), including expertise in bioethics to classify research protocols, write reports of ARC human research activities to NASA Headquarters, and provide a continuing educational program for members of the Human Institutional Review Board.

h) Provide administrative support for the OPHRP.

3.5 EDUCATION AND PUBLIC OUTREACH

The Contractor shall develop and disseminate mission program/project information and provide public information services and products for Education

and Public Outreach (E/PO). All contractor-supported E/PO activities shall be coordinated with, and subject to the approval of, the Strategic Communications and/or the Education/Public Outreach Divisions in the New Ventures and Communications Directorate. The Contractor shall develop web sites and outreach materials such as brochures, videotapes, compact disks, and displays. The Contractor shall coordinate and participate in outreach events. The Contractor shall provide support for local and national science education programs including preparation of K-12 classroom materials.

The Contractor's E&PO support shall be consistent with NASA Headquarters E&PO policy, include a set of metrics for measuring the effectiveness of the program and be conducted in accordance with the Contractor-developed, NASA-approved plan. The E&PO support shall make significant and measurable contributions to national goals for the reform of science, mathematics, and technology education and for the general elevation of scientific and technological literacy throughout the country. It shall be the responsibility of the Contractor [SUGGEST KEEPING ORIGINAL LANGUAGE]for support in keeping the science and education communities, the media, and the public at large informed as to the scientific status of Programs/Projects, its accomplishments, and opportunities for participation in the science programs. This shall be accomplished, at a minimum, through the development and maintenance of a science website, regular publication of a newsletter, and attendance by the Contractor staff at scientific meetings and education conferences.

Subject to the coordination with and approval of the cognizant Program Public Affairs Working Group (PAWG), the contractor shall develop, update, and implement a Project's or Program's Public Affairs Plans. The contractor shall coordinate and support the PAWG in producing detailed media plans specifying activities and products coinciding with significant mission milestones, events, and scientific discoveries. These media plans will be in accordance with the approved Programs Public Affairs Plan, data rights agreements, and strategic direction from the Program Offices. The media plans must be coordinated with and receive concurance from the cognizant Program Offices. In addition, the contractor shall produce routine public affairs products in accordance with existing media plans. These products require peer review and approval by in an existing media plan) will require specific approval from the Program Offices. The contractor shall support and coordinate media training for key members of the NASA ARC Programs.

3.6 AERONAUTICS PROJECTS

The Aeronautics projects in NASA are distributed across multiple centers. Not only is the research for each project performed at two or more centers, but the project management teams are also distributed across two or more centers. This allows for a broader and richer source of ideas for accomplishing aeronautics

research objectives, but it also causes the overall management of the projects to be more cumbersome—therefore requiring additional written and verbal communications to promote management practices that are as effective and efficient as possible. The Aeronautics Projects Office (APO) at Ames is the primary support organization for the Aeronautics project officials located at Ames. The APO provides management assistance, budgetary oversight, and programmatic support for the project officials. The APO also provides support for technical information dissemination, technical seminars, conference displays, and other activities as defined and requested by the aeronautics projects.

The overall requirement of the Contract Task Order for the Aeronautics projects is to provide support to include: milestone tracking and documentation support; data management; development and editing of project plans and presentations; facility and safety support; planning, scheduling, and providing support for conferences, workshops, meetings, reviews, and briefings; and other associated programmatic support. The CTO also requires that the Aeronautics projects' products and achievement receive exposure and consideration in the aviation community, to include other government agencies such as the Federal Aviation Administration and the Joint Planning and Development Office, as well as aerospace companies, such as airframe and avionics manufacturers, as well as airlines and academia.

3.7 DOCUMENTATION

Overall contract data requirements are described on Attachment J.1(a)x, Contract Data Requirements List. Specific task documentation requirements will be included in the Contract Task Order.

4.0 PHASE-IN AND PHASE-OUT

Phase-In:

The phase-in process shall be accomplished as expeditiously as possible, with a maximum phase-in period of 30 days. The incoming Contractor is responsible for providing qualified Contractor personnel by the end of the phase-in period.

Phase-Out:

Upon completion of this contract, the outgoing Contractor is responsible for the orderly transfer of duties and records to the incoming Contractor. This should be accomplished in an expeditious manner, consistent with any contract phase-in schedule, while minimally impacting ongoing task orders. The Contractor shall submit a phase-out plan no later than 60 days before the end of the contract for Government review and approval.

5.0 ACRONYMS

AMS	Ames Management System
ARC	Ames Research Center
COTR	Contracting Officer's Technical Representative
CTO	Contract Task Order
E/PO	Education and Public Outreach
FILMSS	Fully Integrated Lifecycle Mission Support Services
HRP	Human Research Program (HRP)
ISS	International Space Station
NAI	NASA Astrobiology Institute
NASA	National Aeronautics and Space Administration
NLSI	NASA Lunar Science Institute
PAWG	Public Affairs Working Group
Small Sat	Small Satellite Missions
SOFIA	Stratospheric Observatory for Infrared Astronomy
SOW	Statement of Work

6.0 DEFINITIONS

Pre-Phase A *(Concept Phase)*

During Pre-Phase A, a pre-project team studies a broad range of mission concepts that contribute to program and Mission Directorate goals and objectives. These advanced studies, along with interactions with customers and other potential stakeholders, help the team to identify promising mission concept(s) and draft project-level requirements. The team also identifies potential technology needs (based on the best mission concepts) and assesses the gaps between such needs and current and planned technology readiness levels. These activities are focused toward a Mission Concept Review and Key Decision Points (KDP) A.

Phase A (*Concept & Technology Development*)

During Phase A, a project team is formed to fully develop a baseline mission concept and begin or assume responsibility for the development of needed technologies. This work, along with interactions with customers and other potential stakeholders, helps with the baselining of a mission concept and the program requirements on the project. These activities are focused toward System Requirements Review (SRR) and System Definition Review (SDR/PNAR) (or Mission Definition Review (MDR/PNAR)). The SRR and SDR/PNAR (or MDR/PNAR) process culminates in KDP B.

Phase B (*Preliminary Design & Technology Completion*)

During Phase B, the project team completes its preliminary design and technology development. These activities are focused toward completing the Project Plan and Preliminary Design Review (PDR)/Non-Advocate Review (NAR). The PDR/NAR process culminates in KDP C.

Phase C (*Final Design and Fabrication*)

During Phase C, the project completes the design that meets the detailed requirements and begins fabrication of test and flight article components, assemblies, and subsystems. These activities focus on preparing for the Critical Design Review (CDR) and the System Integration Review (SIR). This phase culminates in KDP D.

Phase D (*System Assembly, Integration and Test, and Launch*)

During Phase D, the project performs system assembly, integration, and test. These activities focus on preparing for the Flight Readiness Review (FRR). This phase culminates in KDP E.

Phase E (*Operations and Sustainment*)

During Phase E, the project implements the Missions Operations Plan developed in previous phases. This phase culminates in KDP F.

Phase F (*Closeout*)

During Phase F, the project implements the Systems Decommissioning/ Disposal Plan developed in Phase E, and performs analyses of the returned data and any returned samples.